

217

JOURNAL OF COLLOID SCIENCE

EDITORS-IN-CHIEF

MILTON KERKER
Clarkson College of Technology
Potsdam, New York

A. C. ZETTMEOYER
Lehigh University
Bethlehem, Penna.

ADVISORY BOARD

VICTOR K. LA MER, Founding Editor
New York, N. Y.

A. E. ALEXANDER
Sydney, Australia
STEPHEN BRUNAUER
Potsdam, N. Y.
J. A. CHRISTIANSEN
Copenhagen, Denmark
P. J. W. DEBYE
Ithaca, N. Y.
B. DERJAGUIN
Moscow, U.S.S.R.
D. G. DERVICHIAN
Paris, France
JOHN T. EDSALL
Boston, Mass.
JOHN D. FERRY
Madison, Wisc.
J. J. HERMANS
Durham N. C.

L. G. LONGSWORTH
New York, N. Y.
S. G. MASON
Montreal, Canada
KAROL J. MYSELS
Los Angeles, Calif.
J. TH. G. OVERBEEK
Utrecht, Holland
J. H. SCHULMAN
New York, N. Y.
LEO SHEDLOVSKY
New York, N. Y.
THEODORE SHEDLOVSKY
New York, N. Y.
ROBERT SIMHA
Los Angeles, Calif.

R. H. SMELLIE
Hartford, Conn.
HARRY SOBOTKA
New York, N. Y.
R. S. STEIN
Amherst, Mass.
JACINTO STEINHARDT
Washington, D. C.
TORSTEN TEORELL
Uppsala, Sweden
H. VAN OLPHEN
Houston, Texas
BRUNO H. ZIMM
La Jolla, Calif.
W. A. ZISMAN
Washington, D. C.

Volume 20
1965



ACADEMIC PRESS
New York and London

COPYRIGHT© 1965, BY ACADEMIC PRESS INC.

ALL RIGHTS RESERVED

NO PART OF THIS VOLUME MAY BE REPRODUCED IN ANY
FORM, BY PHOTOSTAT, MICROFILM, OR ANY OTHER MEANS,
WITHOUT WRITTEN PERMISSION FROM THE PUBLISHERS.

Made in the United States of America

Contents of Volume 20

NUMBER 1, JANUARY 1965

H. C. PARREIRA. Automatic Recording Apparatus for Measurements of Streaming Potentials.....	1
JOHN G. BRODNYAN AND E. LLOYD KELLEY. The Effect of Electrolyte Content on Synthetic Latex Flow Behavior.....	7
S. A. GREENBERG, R. JARNUTOWSKI, AND T. N. CHANG. The Behavior of Polysilicic Acid. II. The Rheology of Silica Suspensions.....	20
H. C. PARREIRA. A Syringe for Surface Tension Measurements at Constant Temperature.....	44
HERMANN LANGE. Dynamic Surface Tension of Detergent Solutions at Constant and Variable Surface Area.....	50
E. VANZO, R. H. MARCHESSAULT, AND V. STANNETT. The Solubility and Swelling of Latex Particles.....	62
SISTER M. ADRIA MCGARRY AND J. FRED HAZEL. Electron Microscopy of Labile Alkali Silicate Solutions.....	72
R. F. PACKHAM. Some Studies of the Coagulation of Dispersed Clays with Hydrolyzing Salts.....	81

NOTE

K. SHINODA AND H. ARAI. Solubility of Nonionic Surface-Active Agents in Hydrocarbons.....	93
---	----

NUMBER 2, FEBRUARY 1965

ISTVAN RACZ AND ERNO ORBAN. Calorimetric Determination of the Hydrophile-Lipophile Balance of Surface-Active Substances.....	99
HOWARD BRENNER. Coupling between the Translational and Rotational Brownian Motions of Rigid Particles of Arbitrary Shape I. Helicoidally Isotropic Particles.....	104
GEORGE M. HIDY. On the Theory of the Coagulation of Noninteracting Particles in Brownian Motion.....	123
W. RIGOLE AND P. VAN DER WEE. The Electrokinetic Mobility of Emulsions of Water in Some Hydrocarbons. Influence of Electrolytes.....	145
H. M. PRINCEN AND S. G. MASON. Shape of a Fluid Drop at a Fluid-Liquid Interface. I. Extension and Test of Two-Phase Theory...	156
RULON E. JOHNSON, JR., AND ROBERT H. DETTRE. The Temperature Dependence of Wettability: Hexadecane on a Fluoropolymer...	173
W. J. KNOX, JR., AND J. F. WRIGHT. The Interaction of Sodium Dodecyl Sulfate with Gelatin.....	177

LETTERS TO THE EDITOR

- TAMOTSU KONDO, SACHIKO IMAI, CHIEKO SHIBUYA, AND CHIZUKO TAMURA. Lytic Action of Surface-Active Electrolytes on Chloroplasts. 187
- R. M. McAVOY AND ROBERT C. KINTNER. Approach of Two Identical Rigid Spheres in a Liquid Field. 188

NUMBER 3, MARCH 1965

- E. H. CROOK, D. B. FORDYCE, AND G. F. TREBBI. Molecular Weight Distribution of Nomonic Surfactants: II. Partition Coefficients of Normal Distribution and Homogenous *p,t*-Octylphenoxyethoxy-ethanols (OPE's). 191
- A. M. RIJKE. The Liquid Repellency of a Number of Fluorochemical Finished Cotton Fabrics. 205
- H. REERINK. The Micelle Formation of Sodium and Potassium (Tripenylmethyl) Benzenesulfonate in *n*-Heptane. 217
- K. ROBERT LANGE. The Characterization of Molecular Water on Silica Surfaces. 231
- D. LIM AND H. MORAWETZ. Polymer Association. VI. Reversible Gelation of Polystyrene Carrying a Small Number of Short Polycaprolactam Side Chains. 241
- H. M. PRINCEN AND S. G. MASON. Shape of a Fluid Drop at a Fluid-Liquid Interface. II. Theory for Three-Phase Systems. 246
- DAVID G. THOMAS. Transport Characteristics of Suspension: VIII. A Note on the Viscosity of Newtonian Suspensions of Uniform Spherical Particles. 267

LETTERS TO THE EDITOR

- ROBERT SIMHA AND THOMAS SOMCYNISKY. The Viscosity of Concentrated Spherical Suspensions. 278
- LYLE R. DAWSON AND DJONG GIE OEI. Solvents Having High Dielectric Constants. XVI. Properties of Colloids in *N*-Methylacetamide. 282
- BOOK REVIEW. 286

NUMBER 4, APRIL 1965

- K. G. GÖTZ. The Determination of Shape, Size, and Size Distribution of Charged Particles in Solution by Evaluation of the Electrical Anisotropy Effect. 289
- ESTELLA K. MYSELS AND KAROL J. MYSELS. Conductimetric Determination of the Critical Micelle Concentration of Surfactants in Salt Solutions. 315
- EGON MATIJEVIČ. Detection of Metal Ion Hydrolysis by Coagulation. VI. Beryllium. 322

D. E. CHAFFEY AND S. G. MASON. Particle Behavior in Shear and Electric Fields: IV. The Viscosity of Suspensions of Nonrotating Ellipsoids.....	330
LEDDY H. GRINDSTAFF, HILTON A. SMITH, AND WARREN W. HARRIS. The Adsorption of Undecanoic Acid and Nonadecanoic Acid on Oxidized and Unoxidized Copper Crystals.....	341
H. M. PRINCEN AND S. G. MASON. The Permeability of Soap Films to Gases.....	353
THOMAS W. HEALY AND DOUGLAS W. FUERSTENAU. The Oxide-Water Interface—Interrelationship of the Zero Point of Charge and the Heat of Immersion.....	376
LETTERS TO THE EDITORS	
RALPH C. EHLERT. Overturning of Monolayers.....	387
W. R. SMITH AND D. G. FORD. A Convenient Device for Adjustment of Mercury Levels in Gas Adsorption Apparatus.....	390

NUMBER 5, JUNE 1965

L. BLIGHT, C. W. N. CUMPER, AND V. KYTE. Manipulation of Insoluble Films at an Oil/Water Interface.....	393
WILLIAM H. TRICE. The Effect of Autoxidation on the Wettability of a Linoleic Acid Monolayer.....	400
MALCOLM CROSS. Rheology of Non-Newtonian Fluids: A New Flow Equation for Pseudoplastic Systems.....	417
RICHARD P. LONG AND SYDNEY ROSS. An Improved Mass-Transport Cell for Measuring Electrophoretic Mobilities.....	438
B. R. JENNINGS AND H. G. JERRARD. Rayleigh-Gans-Debye and Mie Theories in the Determination of Spherical Particle Sizes.....	448
H. M. PRINCEN AND S. G. MASON. Optical Interference in Curved Soap Films.....	453
M. J. SCHICK AND A. H. GILBERT. Effect of Urea, Guanidinium Chloride, and Dioxane on the C.M.C. of Branched-Chain Non-ionic Detergents.....	464

NOTE

P. NARASIMHAM, MOHAMMAD YASEEN, P. S. KOLHATKAR, AND J. S. AGGARWAL. Counter for Emulsion Photomicrographs....	473
BOOK REVIEW.....	476

NUMBER 6, AUGUST 1965

G. M. HIDY AND J. R. BROCK. Some Remarks about the Coagulation of Aerosol Particles by Brownian Motion.....	477
N. A. FUCHS AND A. G. SUTUGIN. Coagulation Rate of Highly-Dispersed Aerosols.....	492

W. F. ESPENSCHIED, E. WILLIS, E. MATIJEVIC, AND M. KERKER. Aerosol Studies by Light Scattering. IV. Preparation and Particle Size Distribution of Aerosols Consisting of Concentric Spheres...	501
G. ZEBEL. Deposition of Aerosol Flowing Past a Cylindrical Fiber in a Uniform Electric Field.....	522
S. JACOBSEN AND J. R. BROCK. The Thermal Force on Spherical Sodium Chloride Aerosols.....	544
B. V. DORJAGUIN AND YU. YALAMOV. Theory of Thermophoresis of Large Aerosol Particles.....	555
F. L. LUDWIG AND ELMER ROBINSON. Size Distribution of Sulfur- Containing Compounds in Urban Aerosols.....	571
KENNETH T. WHITBY, BENJAMIN Y. H. LIU, AND CARL M. PETERSON. Charging and Decay of Monodispersed Aerosols in the Presence of Unipolar Ion Sources.....	585
G. LANGER. An Acoustic Particle Counter-Preliminary Results.....	602
J. M. SCHNEIDER, N. R. LINDBLAD, AND C. D. HENDRICKS. An Appa- ratus to Study the Collision and Coalescence of Liquid Aerosols..	610
V. W. GOLDSCHMIDT. Measurement of Aerosol Concentrations with a Hot Wire Anemometer.....	617

NUMBER 7, SEPTEMBER 1965

PAUL C. HIEMENZ AND ROBERT D. VOLD. Rates of Flocculation and Deflocculation in Dispersions of Carbon Black in Hydrocarbons..	635
D. N. L. MCGOWN, G. D. PARFITT, AND E. WILLIS. Stability of Non- Aqueous Dispersions. I. The Relationship between Surface Potential and Stability in Hydrocarbon Media.....	650
B. H. BIJSTERBOSCH AND J. LYKLEMA. Electrochemistry of Silver Iodide. Double Layer Properties in the Presence of Adsorbed Organic Molecules.....	665
HEINRICH THIELE AND H. S. VON LEVERN. Synthetic Protective Colloids.....	679
S. LEVINE AND G. M. BELL. The Discrete-Ion Effect and Mutual Antagonism in a Hydrophobic Sol Containing a 1-1 + 2-2 Elec- trolyte Mixture.....	695
PAUL BECHER. Nonionic Surface-Active Compounds. X. Effect of Solvent on Micellar Properties.....	728
JOSEPH STEIGMAN, IRVING COHEN, AND FRANK SPINGCLA. Micelle Formation by a Long-Chain Cation Surfactant in Aqueous Solutions of the Lower Quaternary Ammonium Bromides.....	732
H. C. PARREIRA. The Surface Chemistry of Alkyl Phosphoric Acids..	742
ERWIN SHEPPARD, RONALD P. BRONSON, AND NOUBAR TCHEU- REKDJIAN. Monolayer Studies. II. Electron Microscopy of Normal Paraffinic Polar Compounds.....	755

H. C. KUNG AND E. D. GODDARD. Molecular Association in Pairs of Long Chain Compounds. IV. Influence of Cation and the Hydroxyl Position on the Alkyl Sulfate, Alkyl Alcohol Association..	766
MORRIS B. ABRAMSON, ROBERT KATZMAN, AND ROBERT CURCI. Turbidimetric Studies of the Interaction of Aqueous Micelles of Phosphatidic Acid with Cations.....	777

NUMBER 8, OCTOBER 1965

MARTIN BLANK AND JOHN S. BRITTEN. Transport Properties of Condensed Monolayers.....	789
JAMES C. MELROSE. On the Thermodynamic Relations between Immersional and Adhesional Wetting.....	801
H. VAN OLPHEN. Thermodynamics of Interlayer Adsorption of Water in Clays. I.—Sodium Vermiculite.....	822
WILLIAM H. WADE, SHIICHIRO TERANISHI, AND JACK L. DURHAM. A Microcalorimetric Estimation of the Surface Acidity of $\text{NiSO}_4 \cdot x\text{H}_2\text{O}$ and Catalytically Active Al_2O_3	838
JAMES E. LOHR AND JOHN J. SCHOLZ. Physical Adsorption on Poly (Methylmethacrylate).....	846
R. D. IYENGAR AND A. C. ZETTMEOYER. The Interaction of Nitrous Oxide with Germanium Surfaces.....	857
G. M. HIDY AND D. K. LILLY. Solutions to the Equations for the Kinetics of Coagulation.....	867
JOSIP P. KRATOCHVIL AND COLIN SMART. Calibration of Light Scattering Instruments. III. Absolute Angular Intensity Measurements on Mie Scatterers.....	875
RAYMOND P. MAYER AND ROBERT A. STOWE. Mercury Porosimetry—Breakthrough Pressure for Penetration between Packed Spheres..	893
ERRATUM.....	912

NUMBER 9, DECEMBER 1965

Papers on Membrane Biophysics presented at the 39th National Colloid Symposium, Potsdam, New York

J. I. BREGMAN AND R. S. BRAMAN. Inorganic Ion Exchange Membranes.....	913
CHARLES W. CARR. The Permeation of Lipid Substances Through Porous Membranes.....	923
MARTIN BLANK. A Physical Interpretation of the Ionic Fluxes in Excitable Membranes.....	933
RICHARD CONLEY LA FORCE. A Theory of Active Transport.....	950
I. FATT AND THOMAS K. GOLDSTICK. Dynamics of Water Transport in Swelling Membranes.....	962

MILTON MANES. On the Thermodynamics and Rates of Some Membrane Processes.....	990
RICHARD J. RARIDON AND KURT A. KRAUS. Properties of Organic-Water Mixtures. IV. The Effect of Various Salts on the Miscibility Gap of the Glycerol Triacetate-Water System.....	1000
W. R. VIETH AND K. J. SLADEK. A Model for Diffusion in a Glassy Polymer.....	1014
ALAN S. MICHAELS, HARRIS J. BIXLER, AND ROBERT M. HODGES, JR. Kinetics of Water and Salt Transport in Cellulose Acetate Reverse Osmosis Desalination Membranes.....	1034
R. F. BADDOUR, D. J. GRAVES, AND W. R. VIETH. Transmission of Water and Ions through Crosslinked Hydrophilic Membranes..	1057
Erratum.....	1070
AUTHOR INDEX.....	1071
SUBJECT INDEX.....	1073